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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,448	08/22/2003	Gregory A. Peek	P16158	9511

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EXAMINER	
PHU, PHUONG M	

ART UNIT	PAPER NUMBER
2611	

DATE MAILED: 12/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

SF

Office Action Summary	Application No.	Applicant(s)	
	10/646,448	PEEK ET AL.	
	Examiner	Art Unit	
	Phuong Phu	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,10-18,20-25 and 27-33* is/are rejected.

7)☒ Claim(s) *8,9,19 and 26* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/22/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 12, 15, 17, 18, 23, 25, 28, 30-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Yang et al (6,226,275).

-Regarding to claim 12, see figure 3, col. 6, line 46 to col. 10, line 15, Yang et al discloses a system (see figure 3) , comprising:

a first discrete power amplifier (270) having an input terminal coupled to receive a radio frequency (RF) signal from (276)) which inherently adapted to communicate information using a wireless communication protocol for a wireless trunk group communication system, (the wireless communication protocol considered here equivalent to the limitation "a wireless local area network (WLAN) communication protocol or a wireless metropolitan area network (WMAN) communication protocol" (see col. 1, lines 10-14, col. 6, line 46 to col. 10, line 15); and

a second discrete power amplifier (146) having an input terminal coupled to an output terminal of the first discrete power amplifier.

-Regarding to claim 15, see figure 3, col. 6, line 46 to col. 10, line 15, Yang et al discloses a system, comprising (see figure 3):

a first discrete power amplifier (270) having an input terminal coupled to receive a signal (from (276)) modulated using a multi-carrier duplex mode, (considered here equivalent with the

limitation "orthogonal frequency division multiplexing (OFDM) modulation scheme") (see col. 6, lines 45-50, col. 8, lines 30-39); and

a second discrete power amplifier (146) having an input terminal coupled to an output terminal of the first discrete power amplifier.

-Regarding to claim 17, Yang et al discloses a primary antenna (121) (see figure 3) coupled to an output terminal of second discrete power amplifier.

-Regarding to claim 18, Yang et al discloses a first discrete low noise amplifier (LNA) ((438) of (298) (see (298) of figure 3, and (434 of figure 6), col. 11, lines 10-55) ; and a second discrete low noise amplifier (LNA) (216)(see figure 3) having an input terminal coupled to the primary antenna and an output terminal coupled to an input terminal of the first discrete low noise amplifier.

-Regarding to claim 23, as similarly applied to claims 12, 15, set forth above and herein incorporated, see figure 3, col. 6, line 46 to col. 10, line 15, Yang et al discloses an apparatus to extend communication range in a wireless trunk group communication system, (considered here equivalent with the limitation "a wireless personal area network (WPAN) system, a wireless local area network (WLAN) system, or a wireless metropolitan area network (WMAN) system"), (see figure 3) comprising:

a first power amplifier (PA) (146);

a first low noise amplifier (LNA) (216);

a first circulator (178) having a first terminal (186) coupled to a first terminal (150) of the first power amplifier and a second terminal (182) coupled to a first terminal (218) of the first low noise amplifier; and

a second circulator (124) having a first terminal (130) coupled to a second terminal (148) of the power amplifier and a second terminal (128) coupled to a second terminal (220) of the first low noise amplifier.

-Regarding to claim 25, Yang et al discloses (see figure 3): the first circulator has a third terminal (180) coupled to a first terminal (196) of the apparatus and the second circulator has a third terminal (126) coupled to a second terminal (252) of the apparatus and wherein the apparatus further comprises a second low noise amplifier ((438) of (298) (see (298) of figure 3, and (434 of figure 6), col. 11, lines 10-55) having a first terminal coupled to a third terminal of the apparatus and a second terminal coupled to a fourth terminal (292) (see figure 3) of the apparatus.

-Regarding to claim 28, see figure 3, col. 6, line 46 to col. 10, line 15, Yang et al discloses a system, comprising (see figure 3):

a range extender (110, 276) coupled to receive a signal (via antenna (121)) being transmitted remotely from a remote wireless trunk group communication device (inherently included) (see col. 1, lines 11-14), (the remote wireless trunk group communication device considered here equivalent with the limitation "wireless local area network (WLAN) device"), wherein the range extender comprises:

a first power amplifier (PA) (146);

a first low noise amplifier (LNA) (216);

a first circulator(178) having a first terminal (186) coupled to a first terminal (150) of the first power amplifier and a second terminal (182) coupled to a first terminal (218) of the first low noise amplifier; and

a second circulator (124) having a first terminal (130) coupled to a second terminal of the power amplifier and a second terminal (128) coupled to a second terminal (220) of the first low noise amplifier.

-Regarding to claim 30, Yang et al discloses a second low noise amplifier ((438) of (298) (see (298) of figure 3, and (434 of figure 6), col. 11, lines 10-55) having a first terminal coupled to a first terminal (114) of the range extender and a second terminal coupled to a second terminal (280) of the range extender.

-Regarding to claim 31, as similarly applied to claims 12, 15, 23, 28, set forth above and herein incorporated, see figure 3, col. 6, line 46 to col. 10, line 15, Yang et al discloses a method, comprising (see figure 3): procedure (146, 270) of transmitting a wireless trunk group communication radio frequency (RF) signal, (considered here equivalent with the limitation "wireless local area network (WLAN) radio frequency (RF) signal", using two discrete power amplifiers (146, 270).

-Regarding to claim 32, Yang et al discloses procedure of receiving a wireless trunk group communication radio frequency (RF) signal using two discrete low noise amplifiers (216) (see figure 3) and ((438) of (298) (see (298) of figure 3, and (434 of figure 6), col. 11, lines 10-55).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-7, 10, 11, 13, 14, 16, 20-22, 24, 27, 29 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al.

-Regarding to claim 1, as similarly applied to claims 12, 15, 17, 18, 23, 25, 28, 30-32, set forth above and herein incorporated, see figure 3, col. 6, line 46 to col. 10, line 15, Yang et al discloses a system (see figure 3) comprising:

a first discrete power amplifier (270); and

a second discrete power amplifier (146) having an input terminal coupled to an output terminal of the first discrete power amplifier.

Yang et al does not disclose that the output power of the second discrete power amplifier is about 30 dBm or less.

However, he teaches that the second discrete power amplifier is configurable to output power of tenths of dBm (e.g., 40 dBm) (see col. 4, lines 51-52), and he further teaches that the system can be altered and modified by those skilled in the art (see col. 13, lines 19-26).

Therefore for an application of Yang et al invention , it would have been obvious for one skilled in the art, within his skills, to implement Yang et al in such a way that the output power of the second discrete power amplifier is about 40 dBm, 35 dBm, 30 dBm or less in order to meet the system specification which might be required in the application.

-Regarding to claim 2, Yang et al discloses that the first discrete power amplifier is coupled to the second discrete power amplifier using a proprietary mechanical interface (132, 124, 250, 256) (see figure 3).

-Regarding to claim 3, Yang et al discloses a wireless trunk group communication system access point, (considered here equivalent with the limitation "wireless local area network

(WLAN) access point"), (comprising (110) (see figure 3) comprising the first discrete power amplifier; and an add-on module (276) coupled to the wireless trunk group communication system and comprising the second discrete power amplifier (see figure 3, col. 1, lines 11-15, col. 6, line 46 to col. 10, line 15).

-Regarding to claim 4, Yang et al discloses a first discrete low noise amplifier (LNA) ((438) of (298) (see (298) of figure 3, and (434 of figure 6), col. 11, lines 10-55); and a second discrete low noise amplifier (LNA) (216) (see figure 3) having an output terminal coupled to an input terminal of the first discrete low noise amplifier via (124, 264, 282, 276) (see figure 3).

-Regarding to claim 5, Yang et al discloses (see figure 3):

a first circulator (124) having a first port (126) coupled to the output terminal of the first discrete power amplifier and the input terminal of the first discrete low noise amplifier (438), a second port (130) coupled to the input terminal of the second discrete power amplifier, and a third port (128) coupled to the output terminal of the second discrete low noise amplifier (216); and

a second circulator (178) having a first port (186) coupled to an output terminal of second discrete power amplifier and a second port (182) coupled to an input terminal of the second discrete low noise amplifier.

-Regarding to claim 6, Yang et al discloses a third discrete low noise amplifier (LNA) (434) (see figure 6) having an output terminal coupled to the input terminal of the first low noise amplifier.

-Regarding to claim 7, Yang et al discloses (see figure 3):

a first switch (132);

a second switch (256);

a third switch (168) having a first terminal (170) coupled to an output terminal (150) of the second discrete power amplifier and a second terminal (174) coupled to an input terminal (218) of the second discrete LNA; and

a forth switch (224);

wherein the output terminal (274) of the first discrete power amplifier is coupled to the input terminal (218) of the second discrete power amplifier via the first and second switches; and

wherein the output terminal (220) of the second discrete LNA is coupled to the input terminal of the first discrete LNA via the second and fourth switches.

-Regarding to claim 10, Yang et al does not teach that the first discrete power amplifier has an output power of about 10 dBm. However, Yang et al teaches that the system can be altered and modified by those skilled in the art (see col. 13, lines 19-26).

Therefore for an application of Yang et al invention , it would have been obvious for one skilled in the art, within his skills, to implement Yang et al in such a way that the first discrete power amplifier has an output power of about 10 dBm so that the signal generated from the first discrete power amplifier at the power level, as desired or specified by the one skilled in the art.

-Regarding to claim 11, Yang et al discloses that the first discrete power amplifier has an input terminal coupled to receive a radio frequency (RF) signal modulated using a multi-carrier duplex mode, (considered here equivalent with the limitation "orthogonal frequency division multiplexing (OFDM) modulation scheme") (see col. 6, lines 45-50, col. 8, lines 30-39).

-Regarding to claims 13 and 14, Yang et al does not disclose whether the wireless communication protocol is a communication protocol substantially conforming to an Industrial

Electrical and Electronics Engineers (IEEE) 802.11 standard or 802.16 standard. However, using these standards for wireless communication is well-known in the art, and the examiner takes Official Notice. Since Yang et al does not teach in detail which type the wireless communication protocol is, it would have been obvious for one skilled in the art within his skills, during carrying out Yang et al invention, to implement Yang et al in such a way that an Industrial Electrical and Electronics Engineers (IEEE) 802.11 standard or 802.16 standard is used for the wireless communication protocol so that the radio frequency signal would be obtained as required in Yang et al invention.

-Regarding to claim 16, Yang et al does not disclose that the output power of the second discrete power amplifier is about 30 dBm or less.

However, he teaches that the second discrete power amplifier is configurable to output power of tenths of dBm (e.g., 40 dBm) (see col. 4, lines 51-52), and he further teaches that the system can be altered and modified by those skilled in the art (see col. 13, lines 19-26).

Therefore for an application of Yang et al invention , it would have been obvious for one skilled in the art, within his skills, to implement Yang et al in such a way that the output power of the second discrete power amplifier is about 40 dBm, 35 dBm, 30 dBm or less in order to meet the system specification which might be required in the application.

-Regarding to claim 20, as similarly applied to claims 12, 15, 17, 18, 23, 25, 28, 30-32, set forth above and herein incorporated, see figure 3, col. 6, line 46 to col. 10, line 15, Yang et al discloses a receive path to receive a radio frequency (RF) signal, (see figure 3) comprising:

a first low noise amplifier (LNA) ((438) of (298) (see (298) of figure 3, and (434 of figure 6), col. 11, lines 10-55); and

a second low noise amplifier (LNA) (216) (see figure 3) having an output terminal coupled to the input terminal of the first low noise amplifier.

Yang et al does not teach that a noise figure of the second low noise amplifier is less than a noise figure of the first low noise amplifier, as claimed.

However, Yang et al teaches that the system can be altered and modified by those skilled in the art (see col. 13, lines 19-26).

Therefore for an application of Yang et al invention , it would have been obvious for one skilled in the art, within his skills, to implement Yang et al in such a way that a noise figure of the second low noise amplifier is less than a noise figure of the first low noise amplifier so that the system would have a total low noise figure as desired or specified.

-Regarding to claim 21, Yang et al discloses that the first low noise amplifier is part of a wireless trunk group communication transceiver (see figure 3, col. 1, lines 11-14), (considered here equivalent with the limitation "local area network (WLAN) transceiver").

-Regarding to claim 22, Yang et al discloses that the second low noise amplifier is coupled to receive a radio frequency (RF) signal modulated using a multi-carrier duplex mode, (considered here equivalent with the limitation "orthogonal frequency division multiplexing (OFDM) modulation scheme") (see col. 6, lines 45-50, col. 8, lines 30-39).

Yang et al does not teach whether the RF signal has a power level of less than about -90 dBm and wherein the first low noise amplifier has a gain of at least about 20 dB and a noise figure less than about 10 dB and wherein the second LNA has a gain of at least about 30 dB and a noise figure less than about 4 dB.

However, Yang et al teaches that the system can be altered and modified by those skilled in the art (see col. 13, lines 19-26).

Therefore for an application of Yang et al invention , it would have been obvious for one skilled in the art, within his skills, to implement Yang et al in such a way that the RF signal being received has a power level of less than about -90 dBm and the first low noise amplifier has a gain of at least about 20 dB and a noise figure less than about 10 dB and wherein the second LNA has a gain of at least about 30 dB and a noise figure less than about 4 dB so that the system would meet a system requirement as desired or specified by the one skilled in the art.

-Claim 24 is rejected with similar reasons set forth for claims 13, 14.

-Regarding to claim 27, Yang et al does not teach that the first power amplifier has an output power of about 30 dBm or less and the first low noise amplifier has a gain of at least about 30 dB and a noise figure of less than about 6 dB.

However, Yang et al teaches that the system can be altered and modified by those skilled in the art (see col. 13, lines 19-26).

Therefore for an application of Yang et al invention , it would have been obvious for one skilled in the art, within his skills, to implement Yang et al in such a way that that the first power amplifier has an output power of about 30 dBm or less and the first low noise amplifier has a gain of at least about 30 dB and a noise figure of less than about 6 dB so that the system would meet a system requirement as desired or specified by the one skilled in the art.

-Regarding to claim 29, Yang et al does not teach that the device is an Industrial Electrical and Electronics Engineers (IEEE) 802.11 access point (AP).

However, Yang et al teaches that the system can be altered and modified by those skilled in the art (see col. 13, lines 19-26).

Therefore for an application of Yang et al invention , it would have been obvious for one skilled in the art, within his skills, to implement Yang et al in such a way that that the device is an Industrial Electrical and Electronics Engineers (IEEE) 802.11 access point (AP) so that the signal would be transmitted from the device, as desired or specified by the one skilled in the art.

-Regarding to claim 33, Yang et al does not teach that the wireless trunk group communication radio frequency (RF) signal is a signal generated using a protocol substantially based on an Industrial Electrical and Electronics Engineers (IEEE) 802.11 standard.

However, Yang et al teaches that the system can be altered and modified by those skilled in the art (see col. 13, lines 19-26).

Therefore for an application of Yang et al invention , it would have been obvious for one skilled in the art, within his skills, to implement Yang et al in such a way that the wireless trunk group communication radio frequency (RF) signal is a signal generated using a protocol substantially based on an Industrial Electrical and Electronics Engineers (IEEE) 802.11 standard so that the signal would be transmitted, as desired or specified by the one skilled in the art.

Allowable Subject Matter

5. Claims 8, 9, 19 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

6. References 6005884, 6784837, 6983174 are additionally cited because they are pertinent to the claimed invention.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong Phu whose telephone number is 571-272-3009. The examiner can normally be reached on M-F (8:00 AM - 4:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Phuong Phu
Primary Examiner
Art Unit 2611

Phuong Phu

PHUONG PHU
PRIMARY EXAMINER

Phuong Phu
11/09/06